

## ASSEMBLY FOR REMOVABLY SUPPORTING CARGO ON A VEHICLE

### BACKGROUND OF THE INVENTION

#### Claim of Priority

This patent application is a continuation-in-part of a currently pending patent application, namely, that having Serial No. 09/842,498 and a filing date of April 25, 2001, which is set to mature into U.S. Patent No. 6,599,078 on July 29, 2003. The afore-said "parent" patent application is hereby incorporated by reference in its entirety.

#### Field of the Invention

This invention relates to an assembly for positioning a mobile carrier or other load in a supported position on the exterior of a vehicle and comprises a hoist assembly and a support assembly. Both the load and the hoist assembly are concurrently mounted on the vehicle, preferably by being interconnected to the vehicle's hitch structure, wherein the mobile carrier may be positioned in and removed from its supported position without the cargo being repeatedly loaded on and unloaded from the carrier.

### DESCRIPTION OF THE RELATED ART

It is common practice to carry various types of loads,

1 cargo, etc. on the interior of vehicles. Depending on the  
2 weight of the load or cargo intended to be transported, it is  
3 also known to use some type of lifting device. Typically, such  
4 lifting devices are structured to lift and position the intended  
5 load into some part of the interior of the vehicle. As one  
6 example, pick-up trucks are specifically designed to use the  
7 truck bed as a support platform for the positioning of a variety  
8 of different loads on the truck. Also, with the increased  
9 popularity of sport utility vehicles (SUVs) the interior cargo  
10 area associated with such vehicles is also, in many cases,  
11 specifically designed for the containment of a variety of  
12 different types of cargo.

13 In addition to the above, more conventional motor vehicles,  
14 such as passenger automobiles and the like may in some instances  
15 be adapted for the mounting and support of a variety of  
16 different loads, cargo, etc. on the exterior thereof. In such  
17 instances, the use of auxiliary article carriers attached to  
18 some portion of the exterior of the vehicle has been attempted.  
19 However, the known or conventional mounting of carrier  
20 structures specifically designed to be secured to the exterior  
21 portion of a vehicle, for the transport thereof, typically  
22 requires that such article carriers be at least partially  
23 dismantled or otherwise modified in order to accomplish their  
24 secure mounting on the vehicle. The resulting problems and  
25 disadvantages associated with such known or conventional

1 auxiliary article carriers are obvious and significant. More  
2 specifically, it is extremely inconvenient to the user of such  
3 known structures to assemble and/or disassemble various portions  
4 of the auxiliary carrier when it is desired to either load or  
5 unload the carrier onto the vehicle.

6 In addition to the above, such carrying devices are  
7 normally not capable of having an intended load or cargo  
8 maintained thereon during the loading and unloading procedure.  
9 As a result, each time an auxiliary carrier is secured to a  
10 vehicle or removed therefrom, the user must remove the intended  
11 cargo from the carrier, place it in a convenient location, and  
12 then re-load the cargo once the vehicle and supported carrier  
13 reaches an intended designation. The above procedure, in  
14 addition to being extremely inconvenient, also defeats the  
15 primary purpose of using article carriers since the user must  
16 repeatedly load and unload the cargo from the carrier, as set  
17 forth above.

18 By way of example only, a user who enjoys the sport of  
19 fishing frequently employs the use of a mobile carrier assembly  
20 such as, but not limited to, various types of hand propelled  
21 carts or the like. These devices are used to move various  
22 equipment, devices, and supplies which may be required during a  
23 day of fishing. Such mobile carrier assemblies are commonly  
24 used in the transport of the various equipment, supplies, etc.  
25 from a vehicle to a fixed land object where, such as a pier,

1 jetty, etc. where the fishing is to be conducted. Obviously, to  
2 assist the transport of the aforementioned equipment and  
3 supplies to and from the vehicle to the fishing site the mobile  
4 carrier assembly is extremely helpful. However, often times  
5 such carrier assemblies, as generally set forth above, are  
6 difficult to load onto and remove from the transporting vehicle.  
7 Therefore, as with known or conventional auxiliary article  
8 carriers, it is not uncommon for the user to repeatedly load and  
9 unload all of the supplies during the mounting and removal of  
10 the carrier on and from the vehicle.

11 In addition to the time and inconvenience associated with  
12 such loading and unloading, it is also well recognized that such  
13 equipment, supplies, etc. can involve a considerable amount of  
14 weight, e.g., generally in the range of 200 pounds or more.  
15 Accordingly, it is readily apparent that the continuous and  
16 repeated handling of such equipment becomes a significant burden  
17 which seriously detracts from the intended enjoyment of fishing.

18 In an attempt to overcome the problems associated with the  
19 lifting, positioning and supporting of a variety of different  
20 loads, other than but including fishing supplies and equipment,  
21 the prior art has attempted to utilize a variety of lifting  
22 devices or winch assemblies. However, such known attempts  
23 typically involve situations where the winch is utilized to lift  
24 heavier than normal loads off the ground or other supporting  
25 surface and into or on an area or support platform specifically

1 intended to store and support cargo. Therefore, known lifting  
2 devices are typically associated with pick-up trucks, vans,  
3 SUV's, etc. Such devices are not easily adaptable for use with  
4 conventional passenger cars. To the contrary, such passenger  
5 vehicles are best suited to have a carrier assembly, along with  
6 the cargo associated therewith secured to an exterior portion of  
7 the vehicle. Also, known lifting devices, of the type set forth  
8 above, frequently require their disassembly, once the cargo is  
9 loaded, in order that the vehicle may travel safely between  
10 intended locations.

11 Therefore, it is well recognized that there are long  
12 existing and significant problems relating to lifting,  
13 positioning and supporting of a variety of different cargos on  
14 a vehicle for the transport thereof between intended locations.  
15 Accordingly, a need exists for an assembly capable of  
16 facilitating the storage of a mobile carrier assembly on the  
17 exterior of virtually any type of motor vehicle in a manner  
18 which eliminates the requirement or need for removing the cargo  
19 from the mobile carrier assembly during the loading and  
20 unloading procedure. If any such assembly were developed, it  
21 would preferably include the utilization of an effectively  
22 structured hoist assembly, which also may be mounted to the  
23 exterior of the vehicle concurrently to the mounting and support  
24 of the aforementioned mobile carrier assembly and cargo  
25 associated therewith. It is contemplated that the utilization

1 of any such improved assembly would eliminate most, if not all,  
2 of the problems and disadvantages associated with the  
3 transporting of various supplies and equipment between  
4 locations, by means of a motor vehicle, and also eliminate the  
5 unnecessary requirement of repeated loading and unloading of  
6 mobile carrier assemblies used to transport an intended cargo to  
7 a site or location for use. Finally, if any such improved  
8 assembly were developed, it should also be durable, safe in its  
9 construction and use, and be capable of being connected to the  
10 exterior of the vehicle without requiring any unusual or  
11 significant structural modifications of the vehicle, thereby  
12 enabling the use of such an improved assembly available for a  
13 variety of different applications.

#### 14 15 SUMMARY OF THE INVENTION

16 The present invention is directed to an assembly structured  
17 to position a load, which is preferably, but not necessarily in  
18 the form of a mobile carrier assembly such as a hand truck, in  
19 a supported position on the exterior of a vehicle. In such a  
20 supported position, the load can be transported to various  
21 locations and upon arrival at an intended designation, the load  
22 can be quickly and easily removed from its supported position on  
23 the vehicle. Once so removed, the mobile carrier assembly or  
24 hand truck can travel over the ground or other supporting  
25 surface so as to further transport the load or cargo mounted

1 thereon to an intended site of use. The load or cargo should  
2 remain secured to the hand truck during all phases of it being  
3 mounted on and removed from the exterior of the vehicle. As  
4 such, the need to repeatedly load and unload the cargo from the  
5 hand truck, as is common in conventional mobile carrier  
6 assemblies, is eliminated.

7 As will be described in greater detail hereinafter, the  
8 versatility of the assembly of the present invention allows for  
9 the positioning of a variety of different loads and associated  
10 cargos in a supported position on the vehicle. As such, the  
11 load and/or cargo may weigh several hundred pounds, wherein the  
12 weight limit is determined not only by the structural features  
13 of the assembly of the present invention, but also by the load  
14 restrictions of the hitch structure secured to the vehicle.

15 More specifically, the assembly of the present invention  
16 comprises a base which is connected to the exterior of a motor  
17 vehicle, preferably by means of interconnecting the base to a  
18 hitch structure. Further, the base is preferably removably  
19 connected to the hitch structure of the vehicle but, due to its  
20 relatively compact structure, may be left in place even when a  
21 load is not intended to be mounted on and transported by the  
22 vehicle.

23 In addition, at least one preferred embodiment of the  
24 assembly of the present invention includes a hoist assembly  
25 comprising a winch and a lifting cable connected thereto. The

1 hoist assembly further includes a stanchion and a boom connected  
2 in outwardly extending relation to the stanchion, wherein the  
3 boom defines at least a portion of the path of travel of the  
4 cable between the winch and the load, to which the cable is  
5 attached.

6 Another feature of the assembly of the present invention  
7 includes the provision of a support assembly connected to the  
8 base and including individual support portions for concurrently  
9 supporting the hoist assembly and the load or mobile carrier  
10 assembly on the vehicle. More specifically, the support  
11 assembly includes at least a first or load support portion  
12 specifically structured to removably retain a portion of the  
13 hand truck or other mobile carrier assembly in a position or  
14 orientation which does not require the removal of cargo  
15 therefrom. Also, the support assembly includes at least a  
16 second support portion for the independent support of the hoist  
17 assembly, and in particular, the stanchion associated therewith.  
18 The second support portion is further structured to maintain the  
19 stanchion, the boom, the winch and the connecting cable all in  
20 a substantially operative position, concurrently to the support  
21 of the hand truck, on the exterior of the vehicle. The  
22 positioning of both the hoist assembly and the concurrently  
23 supported hand truck is such as to facilitate travel of the  
24 vehicle and secure attachment of the assembly on an exterior  
25 thereof in a safe manner.



1           Also, the versatility of the present invention is  
2 demonstrated by the ability to mount and support a variety of  
3 different loads, other than a hand truck or other mobile  
4 carrier, on the vehicle. Accordingly, the structure of the load  
5 may vary and be of different weights, sizes and configurations.  
6 However, when the load is in the form of a hand truck or like  
7 carrier, it may be mounted on and removed from the vehicle  
8 without necessitating the repetitive loading and unloading of  
9 the cargo therefrom.

10           Therefore, one feature of the present invention includes  
11 the structuring of the boom to have a selectively variable  
12 length, so as to extend outwardly from the stanchion into  
13 different positions. The boom, as set forth above, defines at  
14 least a portion of the path of travel of the connecting cable  
15 and as such, serves to position the connecting cable relative to  
16 the load. More specifically, the point of attachment of the  
17 connecting cable to the load may be varied dependent, at least  
18 in part, on the location of the center of gravity of the hand  
19 truck and/or cargo. Proper alignment of the cable and the  
20 center of gravity is important in maintaining a proper  
21 orientation of the hand truck and the cargo, so as to facilitate  
22 its positioning into and out of a preferred supported position  
23 on the vehicle by virtue of an interconnection of the base to  
24 the hitch structure associated with the vehicle.

25           In addition, the length of the boom may be selectively

1 varied into different preferred positions depending on whether  
2 the hand truck and cargo are being mounted on or removed from  
3 the support assembly. Also, further adjustment of the boom,  
4 resulting in selective positioning of the connecting cable  
5 relative to the load, can be easily accomplished to accommodate  
6 a variety of different cargos mounted on the hand truck.  
7 Therefore, proper orientation of the load and cargo can be  
8 easily accomplished when the center of gravity of a particular  
9 cargo significantly differs from the last cargo mounted on and  
10 transported by the hand truck or like mobile carrier assembly.

11 Yet another preferred embodiment of the present invention  
12 is directed to another assembly that is also structured to  
13 position a load in a supported position on the exterior of a  
14 vehicle in supported and connected relation to a hitch assembly.  
15 However, distinguishing features of this preferred embodiment  
16 further demonstrate the versatility of the present invention by  
17 removably supporting the load, which in this embodiment is  
18 defined by the cargo and is absent the use of a hand truck or  
19 mobile carrier. While the various embodiments of the assembly  
20 of the present invention are adapted to support a plurality of  
21 different types of cargo on the vehicle, the particular cargo  
22 referred to in this embodiment is of the type which is mobile.  
23 The terms "mobile cargo" may be more specifically described as  
24 including its own wheel assembly or wheeled support incorporated  
25 therein. As such, the mobile cargo does not require the use of

1 a hand truck or like mobile carrier to transport it over the  
2 ground or other supporting surface from one location to another.  
3 Therefore, use of a mobile carrier would be superfluous, even  
4 when the mobile cargo is mounted and supported on a vehicle for  
5 transportation. The terms or category of "mobile cargo" may  
6 include but, is most certainly not limited to, lawn mowers, snow  
7 blowers, power washers, generators, compressors, etc.

8 In supporting a mobile cargo in the intended manner, this  
9 alternative embodiment of the assembly of the present invention  
10 is substantially equivalent to that described above. Therefore,  
11 this alternative assembly also includes a base removably  
12 attachable to a hitch of a vehicle, wherein the base is disposed  
13 in supporting relation to the hoist assembly, including a  
14 stanchion and a boom connected in outwardly extending relation  
15 to the stanchion. As with previously described embodiments, the  
16 boom and the stanchion at least partially define a portion of  
17 the path of travel of a supporting cable extending from the  
18 winch to the load, where the free end of the cable is attached  
19 directly to the mobile cargo. In accomplishing such attachment,  
20 the boom may be selectively adjusted both towards and away from  
21 the stanchion in order to maintain control of and properly  
22 position the cargo relative to the load support portion  
23 immediately prior to the cargo being loaded, while it is  
24 supported, and as it is being removed.

25 As also set forth above, this preferred embodiment of the

1 present invention includes a support assembly including the load  
2 support portion, which may also be considered and referred to  
3 herein as a cargo engaging or cargo retaining portion. The  
4 support assembly is also disposed and structured to support the  
5 hoist assembly, as set forth in the previously described  
6 embodiments. Accordingly, the load support portion is  
7 structured to removably engage and/or retain a portion of the  
8 cargo itself, rather than retaining or supporting a mobile  
9 carrier, as with previously described embodiments. As such, the  
10 supporting cable is attached directly to the mobile cargo which,  
11 as set forth in greater detail hereinafter, has a substantially  
12 consistent center of gravity. Therefore, the connection of the  
13 free end of the supporting cable to the mobile cargo occurs  
14 preferably at a fixed connecting point, due to the fixed center  
15 of gravity, which may or may not be specifically structured to  
16 receive a coupling structure attached to the free end of the  
17 cable. The connecting point at which the cable is connected to  
18 the cargo is preferably disposed in substantial alignment with  
19 the center of gravity of the cargo. However, the supporting  
20 cable may or may not be substantially aligned with the center of  
21 gravity of the mobile cargo, depending at least in part, on  
22 whether the cargo is being loaded onto the load support portion,  
23 supported thereby, or being removed therefrom.

24 More specifically, the connecting point or location where  
25 the free end of the support cable engages the mobile cargo

1 should preferably be substantially aligned with the center of  
2 gravity of the cargo in order to maintain a preferred and  
3 controlled "upright" orientation of the cargo, especially, but  
4 not exclusively, when it is supported solely from the cable.  
5 However, as set forth above with regard to the previous  
6 embodiments, the boom is selectively adjustable along its length  
7 in outwardly spaced relation to the stanchion. Therefore, the  
8 selective longitudinal positioning of the boom relative to the  
9 stanchion serves to position the cargo in a desired location or  
10 proximity relative to the load support portion. The preferred  
11 relative proximity there-between will depend on whether the  
12 cargo is being loaded onto the support portion, supported  
13 thereon, or unloaded therefrom.

14 Other factors which may affect the selective adjustment or  
15 positioning of the boom relative to the stanchion include the  
16 positioning or parking of the vehicle on an inclined surface.  
17 For example, if the vehicle is parked on a downhill incline, the  
18 boom may be positioned to extend outwardly from the stanchion a  
19 somewhat greater than normal distance to facilitate an outward  
20 travel or "swinging" of the cargo away from the load support  
21 portion, such as when the cargo is being unloaded. Conversely,  
22 if the vehicle is parked in an uphill location, the boom may be  
23 disposed outwardly from the stanchion a relatively shorter  
24 distance, thereby somewhat limiting the outward travel of the  
25 cargo from the load support portion when being unloaded and

1 bringing the cargo into closer proximity to the load support  
2 portion when it is being loaded onto the load support portion.  
3 Accordingly, the ability to selectively adjust the length of the  
4 boom in outwardly spaced relation to the stanchion enables an  
5 individual to maintain the desired proximity between the load  
6 support portion and the portion of the cargo which engages the  
7 load support portion.

8 Other structural features and components are associated  
9 with the assembly, particularly include the stanchion having one  
10 or more attachment members engaging the handle or other parts of  
11 the mobile cargo to further facilitate secure support of the  
12 mobile cargo on the assembly.

13 Yet another preferred embodiment of the present invention  
14 includes the assembly being structured to further demonstrate  
15 significant versatility by enabling its lifting and support of  
16 cargo onto the base, wherein the cargo has a height,  
17 configuration or other physical characteristic which renders the  
18 use of the stanchion and boom assembly as described above, less  
19 than totally efficient. More specifically, in this additional  
20 preferred embodiment, the assembly includes a base securely  
21 connected to a support assembly and a hoist assembly. As with  
22 the previously described embodiments, the hoist assembly  
23 includes a winch connected in driving relation to a supporting  
24 cable and a boom. The boom at least partially defines the path  
25 of the cable as it extends from the winch to its point of

1 connection with the load being mounted on the vehicle.

2 In this additional preferred embodiment, the load is  
3 preferably defined by a hand truck or other mobile carrier  
4 connected to and supporting the cargo, wherein the cargo is most  
5 probably not of the type which is effectively mobile, as with  
6 the "mobile cargo" described above. Further, this embodiment of  
7 the assembly includes the support assembly comprising a load  
8 support portion disposed at a predetermined orientation  
9 preferably defined by an angular or inclined orientation,  
10 relative to the ground. The load support portion is connected  
11 to the base in interconnecting relation to the hitch structure  
12 of the vehicle. Further, the load support portion comprises a  
13 guide assembly. In order to properly dispose and position the  
14 supported load, including a mobile carrier and cargo in the  
15 preferred, predetermined orientation, the load support portion  
16 and the guide assembly are arranged at an incline or angular  
17 orientation. Such a preferred orientation facilitates secure  
18 supporting engagement of the load on the support assembly during  
19 travel of the vehicle, especially when the cargo comprises a  
20 significant height.

21 Other structural features of this preferred embodiment of  
22 the present invention include one or more attachment members  
23 connected to or mounted on the load support portion. These  
24 attachment members may or may not be substantially equivalent,  
25 in both structure and function, to the one or more attachment

1 members secured to the stanchion in one or more of the  
2 previously described embodiments of the present invention.

3 It is, therefore, emphasized that the structural components  
4 of the various preferred embodiments of the assembly of the  
5 present invention are such that a variety of different  
6 load/cargo combinations may be positioned, mounted and supported  
7 on the base of the assembly. Moreover, the load/cargo  
8 combinations may or may not include the use of a supporting hand  
9 truck or like mobile carrier assembly dependent, at least in  
10 part, on the size and configuration of the cargo and whether or  
11 not the cargo is mobile, at least to the extent of having its  
12 own wheeled base or like structure.

13 These and other objects, features and advantages of the  
14 present invention will become more clear when the drawings as  
15 well as the detailed description are taken into consideration.  
16

#### 17 BRIEF DESCRIPTION OF THE DRAWINGS

18 For a fuller understanding of the nature of the present  
19 invention, reference should be had to the following detailed  
20 description taken in connection with the accompanying drawings  
21 in which:

22 Figure 1 is a side view in partial phantom of a preferred  
23 embodiment of the positioning and mounting assembly of the  
24 present invention connected to a hitch structure associated with  
25 a motor vehicle.



1           Figure 2 is a side view in partial phantom of a base and  
2           support assembly associated with the preferred embodiment of  
3           Figure 1.

4           Figure 3 is a top view of the embodiment of Figure 2.

5           Figure 4 is a front view of the embodiment of Figures 2 and  
6           3.

7           Figure 5 is a detailed view in partially exploded form and  
8           cutaway of a portion of a hoist assembly associated with the  
9           embodiment of Figure 1.

10          Figure 6 is a detailed view in partial cutaway showing  
11          interaction between a load and a portion of the hoist assembly  
12          of the embodiments of Figures 1 and 5.

13          Figure 7 is a side view in partial cutaway of a preferred  
14          embodiment of a boom structure associated with the hoist  
15          assembly of the present invention.

16          Figure 8 is a schematic representation of the sequential  
17          positioning of a portion of the load, during a mounting  
18          procedure, relative to the support assembly in accordance with  
19          the position of the boom as shown in Figure 7.

20          Figure 9 is a side view in partial cutaway of the  
21          embodiment of the boom of Figure 7 in a different orientation.

22          Figure 10 is a schematic representation showing the  
23          sequential positions of a portion of the load as it is being  
24          removed from the support assembly associated with the preferred  
25          embodiment of the present invention.

1           Figure 11 is a side view in partial cutaway and phantom of  
2 another preferred embodiment of the present invention, wherein  
3 the load is defined by mobile cargo.

4           Figure 12 is yet another preferred embodiment of the  
5 present invention wherein the load comprises a mobile carrier  
6 having cargo mounted thereon which is of a dimension and/or  
7 configuration to necessitate support of the load on a vehicle at  
8 a predetermined orientation.

9           Figure 13 is a side view in partial schematic representing  
10 a load disposed on a supporting surface prior to being mounted  
11 on the vehicle.

12           Figure 14 is a side view in partial schematic of a  
13 progressive step of the embodiment of Figure 13, wherein in the  
14 load, including a mobile carrier, is connected to a hoist  
15 assembly to assume a predetermined position prior to it being  
16 lifted from a supporting surface.

17           Figure 15 is a side view in partial schematic of the  
18 embodiment of Figures 13 and 14, wherein the load including a  
19 mobile carrier is disposed in the aforementioned predetermined  
20 orientation when lifted from the support surface and mounted on  
21 the vehicle.

22           Like reference numerals refer to like parts throughout the  
23 several views of the drawings.

1        DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

2            As shown in the accompanying drawings, the present  
3        invention is directed to an assembly generally indicated as 10,  
4        structured to position, mount and support a load, generally  
5        indicated as 12, with or without a plurality of different cargos  
6        generally indicated as 14 and/or 14', mounted on the exterior of  
7        a vehicle. The assembly 10, is preferably secured to the  
8        vehicle by means of a hitch structure generally indicated as 16,  
9        which may be of conventional design. The hitch structure 16 is  
10       secured to the frame or undercarriage portion of the vehicle  
11       (not shown for purposes of clarity) and extends outwardly,  
12       preferably from the rear end thereof, into an accessible  
13       location, as shown in Figure 1. The hitch structure 16 may be  
14       in the form of a "box-type" hitch having an elongated draw bar  
15       16' which includes a square or rectangular opening 17  
16       communicating with a hollow interior 18 of similar  
17       configuration.

18           One preferred embodiment of the assembly 10 will be  
19        described in detail hereinafter with specific reference to the  
20        load 12 being in the form of a hand truck or like mobile carrier  
21        assembly, generally indicated as 20. However, it is emphasized  
22        that the load 12 may be defined by a variety of structures,  
23        other than the hand truck or mobile carrier assembly 20. In  
24        addition, the hand truck 20 or other structure defining the load  
25        12, may be capable of removably supporting a variety of

1 different equipment, supplies, objects, devices, appliances,  
2 etc. For purposes of clarity, all of the aforementioned items  
3 are generically categorized and referred to herein as "cargo"  
4 when describing the one or more preferred embodiments of the  
5 present invention.

6 With reference to Figure 1 through 4, the preferred  
7 embodiment of the assembly 10 comprises a base generally  
8 indicated as 22 and including an elongated tongue 24. The  
9 tongue 24 is dimensioned and configured to be telescopically  
10 attached to the hitch structure 16, such as by having an outer  
11 end 26 thereof pass through the open end 17 and into the  
12 interior 18 of the draw bar 16'. In such a position, a locking  
13 device, such as a locking pin or other structure, generally  
14 indicated as 28, passes through aligned apertures cooperatively  
15 formed in both the draw bar 16' and in the tongue 24.

16 As best shown in Figures 2 through 4, the base 22 also  
17 includes a support assembly generally indicated as 30 being  
18 connected thereto. The support assembly 30 includes at least a  
19 first support portion generally indicated as 32 and a second  
20 support portion generally indicated as 34. The first and second  
21 support portions 32 and 34 respectively, are disposed,  
22 dimensioned and configured to concurrently support both the load  
23 12 and a hoist assembly, generally indicated as 36, on the  
24 exterior of the vehicle by virtue of the secured but removable  
25 attachment of the base 22 to the hitch structure 16.

1           In the preferred embodiment of Figures 1 and 2, the hoist  
2           assembly 36 includes an elongated stanchion 38 having a lower  
3           end 39 secured to the second or stanchion support portion 34.  
4           The stanchion 38 is thereby maintained in an operative position,  
5           being vertically oriented so as to extend upwardly and outwardly  
6           from the base 22. As shown in Figure 1, the hoist assembly 36  
7           also includes a winch generally indicated as 40 which may be  
8           manually or otherwise powered by virtue of a crank arm and  
9           handle 42. An elongated connecting cable 44 is wound about and  
10          thereby connected in driven relation to the winch 40. The cable  
11          44 may be movably connected to travel along at least a portion  
12          of the stanchion 38 by virtue of a plurality of pulleys 45. The  
13          free end 46 of the cable 44 includes an appropriate connector or  
14          hook 48 to facilitate attachment to the load 12, preferably  
15          defined by the hand truck or like mobile carrier assembly 20.

16          Still referring to Figure 1, another feature of the  
17          assembly 10 is the provision of a boom, generally indicated as  
18          50, connected to and extending laterally outward from the  
19          stanchion 38. As shown in Figures 5 and 6, the boom 50 includes  
20          at least one arm segment 52 slidably attached, such as by a  
21          telescoping interconnection, to a sleeve-like structure, such as  
22          sleeve arm 54. The telescoping interconnection between the arm  
23          segment 52 and the sleeve arm 54 defines the boom 50 as having  
24          a variable length which may be selectively adjustable so as to  
25          properly orient or position the connecting cable 44 relative to

1 the hand truck 20 or other load 12. Moreover, the segment arm  
2 52 may be selectively positioned into and out of the sleeve arm  
3 54, as indicated by directional arrow 55 in Figure 5, thereby  
4 facilitating the establishment of the preferred length of the  
5 boom 50. As such, the segment arm 52, may be removably locked  
6 or fixed into any of a variety of different longitudinal  
7 positions relative to the sleeve arm 54 by virtue of a plurality  
8 of locking apertures 57. The locking apertures 57 are formed in  
9 the segment arm 52 and disposed in aligned relation with the  
10 opening or aperture 59 formed in the sleeve arm 54. A locking  
11 pin or other device may be used to accomplish the removable  
12 fixed or locked positioning of these two components.

13 In order to further facilitate the proper positioning of  
14 the cable 44 and the connector 48 relative to the hand truck or  
15 like mobile carrier 20, a mounting arm 56 is secured to the hand  
16 truck 20 by a hinge-type connection 56', as shown in Figure 6.  
17 The mounting arm 56 includes a plurality of connecting apertures  
18 58 to which the free end connector 48 of the connecting cable 44  
19 may be attached. As will be explained hereinafter with specific  
20 reference to Figure 7 through 10, the proper positioning of the  
21 connecting cable 44 and the location of connection of the free  
22 end connector 48 to the hand truck 20 greatly facilitates both  
23 the mounting and removal of the hand truck 20 relative to the  
24 support assembly 22. Such proper positioning is at least  
25 partially dependent on the location of the center of gravity of

1 the combined cargo 14, 14' and the hand truck 20 and the  
2 alignment of the cable 44 with the combined center of gravity.

3 Again with primary reference to Figures 1 through 4, the  
4 support assembly 30, as set forth above, includes a second  
5 support portion 34 which may be more specifically described as  
6 a stanchion support portion. The stanchion support portion 34  
7 includes an elongated sleeve 62 having a hollow interior 63 and  
8 an open end 64 through which the lower most end 39 of the  
9 stanchion 38 passes. The transverse dimension of the stanchion  
10 38 and the hollow interior 63 of the sleeve or arm 62 is such as  
11 to provide telescopic, sliding engagement of the end 39 into and  
12 along the length of the interior 63. In addition, and as shown  
13 in Figure 2, locking apertures 65 and 66 respectively formed in  
14 the stanchion 38 and the supporting sleeve 62 are relatively  
15 disposed so as to be aligned and allow the passage there-through  
16 of a locking pin or other structure which serves to secure the  
17 stanchion 38 to the support sleeve 62. Also, as shown in  
18 Figure 4, the support sleeve 62 and hollow interior 63 may have  
19 a multi-sided configuration which substantially corresponds to  
20 a similar, multi-sided configuration of the exterior surface of  
21 the stanchion 38 so as to prevent relative rotation there  
22 between when the end 39 of the stanchion 38 is disposed within  
23 the hollow interior 63, as described above.

24 With reference to Figures 1-3, the support assembly 30 also  
25 comprises the first support portion 32, which may be more

1 specifically described as the load support portion. As such,  
2 the load support portion 32 includes a mounting plate 70 and at  
3 least one but preferably a plurality of retaining members or  
4 tangs 72. The retaining members 72 are secured to an outer or  
5 exposed face 73 of the mounting plate 70 and are disposed in  
6 outwardly spaced relation thereto. A seat member 74 is disposed  
7 in interconnecting relation at a lower end of the space between  
8 the retaining members 72 and the plate 70. In addition, when at  
9 least two of the retaining members 72 are utilized, they are  
10 spaced a sufficient distance from one another, preferably at the  
11 opposite ends of the plate 70, to restrict lateral movement of  
12 the hand truck when it is mounted on the load support portion  
13 32.

14 The effective functioning of the load support portion 32  
15 will be explained, at least in part, based on the structural  
16 features and components of the preferred load 12 being in the  
17 form of the hand truck 20. Accordingly, and as shown in Figure  
18 1, the hand truck 20 includes an elongated frame 21 having a  
19 handle or gripping arm 23 secured to an upper or outer end of  
20 the frame 21 and extending along at least a portion of the  
21 length thereof. In order to assure the safe attachment of the  
22 frame 23 to the support assembly 22 in the position shown in  
23 Figure 1, the assembly 10 also includes an attachment assembly  
24 25 removably connected to the arm 23.

25 The mounting arm 56 is pivotally or otherwise movably



1 connected as at 56' to an upper portion of the hand truck 20, as  
2 shown in Figures 1 and 6. In addition, the hand truck 20  
3 includes a pair of supporting wheels 125 interconnected by an  
4 axle 27. The axle 27 serves to rotatably mount the support  
5 wheels 125 on the lower end of the frame 21 so as to facilitate  
6 travel of the hand truck 20, by manual propulsion, over the  
7 ground or other supporting surface. The axle is connected by a  
8 plurality of brace members 29 structured to further support the  
9 frame 21 as well as any cargo 14, 14' mounted on the hand truck  
10 20 over the ground or supporting surface. Various types of  
11 cargo, 14 or 14' may be positioned, at least in part, on a  
12 platform 31 which may vary in size so as to accommodate cargo  
13 components 14 and 14' of various sizes, weights and  
14 configurations.

15 By virtue of at least one of the preferred embodiments of  
16 the load 12 being in the form of a hand truck 20 or like mobile  
17 carrier assembly, the load support portion 32 is structured in  
18 the manner described in order to best facilitate the mounting,  
19 positioning and support of the hand truck 20 on the base 22 and  
20 interconnected to the hitch structure 16 as shown in Figure 1.  
21 Accordingly, the axle 27 is positionable within the space  
22 existing between the one or more retaining members 72 and the  
23 outer exposed surface 73 of the plate 70 by its passage through  
24 the open upper end 74' of this space. When so positioned the  
25 axle 27 is supported on the seat 74 located between the one or

1 more retaining members 72 and the plate 70, as set forth above.

2 As set forth above, the selective positioning of the boom  
3 50 outwardly from the stanchion 38 into a variety of different  
4 longitudinal positions allows for the preferred positioning of  
5 the cable 44 and more specifically, the end connector 48. The  
6 cable 44 is thereby connected to the hand truck 20, or other  
7 load 12, at a location which facilitates its mounting on the  
8 support assembly 30 or its removal therefrom, as will be  
9 explained in greater detail with reference to Figures 1 and 7  
10 through 10. More specifically, the location of the connection  
11 between the end connector 48 and the hand truck 20 should be  
12 such as to substantially align the cable with the combined  
13 center of gravity of the hand truck 20 and the cargo 14 or 14'.

14 In order to further provide for the effective mounting of  
15 the hand truck 20 on the load support portion 34, at least one  
16 preferred embodiment of the assembly 10 also includes a guide  
17 assembly 80. The guide assembly 80 comprises a guide structure  
18 82 preferably having a slanted orientation as disclosed in  
19 Figure 2. Proper alignment of the cable 44 with the center of  
20 gravity, as set forth above will facilitate interruptive  
21 engagement of the guide structure 82 with the axle 27 during the  
22 lifting of the hand truck 20 from the ground or other support  
23 surface onto the load supporting portion 32.

24 With reference to Figure 7 and 8, as the connecting cable  
25 44 is wound onto the winch 40 the hand truck 20, with the cargo

1 14, 14' mounted thereon, is lifted from the ground or other  
2 supporting surface. During such mounting procedure, when the  
3 cable 44 is located in the preferred position relative to the  
4 hand truck 20, the hand truck 20 will remain in a substantially  
5 vertical orientation. As the hand truck is being lifted, the  
6 guide structure 82 will interruptively engage axle 27 as it  
7 assumes the position "1" indicated in Figure 8. Position "2" of  
8 the axle 27 indicates sliding engagement or travel of the axle  
9 27 along the outer surface of the inclined or slanted guide  
10 member 82. Position "3" of axle 27 indicates its continued  
11 sliding engagement along the outer surface of the retainer  
12 members 72 until it passes over the open ends 74' and above the  
13 space between the retaining members 72 and the mounting plate  
14 70. Once in position "4", the axle 27 will then be lowered by  
15 manipulation of the winch 40 until it engages and is supported  
16 on the seat 74 as shown in the final position "5" of Figure 8.

17 In order to accomplish the intended movement of the axle 27  
18 in the manner described with reference to Figure 8, the boom 50  
19 may be selectively positioned to have a shortened length as  
20 represented in Figure 7. This will provide proper alignment of  
21 the cable 44 and the combined center of gravity of the hand  
22 truck 20 and cargo 14, 14', as set forth above, and facilitate  
23 the axle 27 passing into the aforementioned interruptive  
24 engagement with the guide structure 82. Inward movement of the  
25 axle 27 as indicated by directional arrow 84 will also be

1 accomplished due to the relative orientation of the cable 44 and  
2 the center of gravity of the combined hand truck 20 and the  
3 cargo 14, 14', so as to dispose the axle 27 immediately above  
4 open end 74'.

5 When it is desired to remove the hand truck 20 from its  
6 supported position on the load support portion 32, the boom 50  
7 may be selectively extended outwardly to increase its overall  
8 length. This will have a tendency to force or bias the axle 27  
9 somewhat outwardly away from the mounting plate 70 and retaining  
10 member 72. Accordingly, as the cable 44 lifts the axle 27 from  
11 its supported position on the load support portion 32, as shown  
12 in Figure 10, it passes outwardly through the open end 74' and  
13 away from the load support portion 32 as indicated by  
14 directional arrow 84'. The schematically represented sequential  
15 positions 1 through 4 of the axle 27, as also demonstrated in  
16 Figure 10, indicates the movement of the axle when the cable and  
17 aforementioned center of gravity are properly aligned during the  
18 unloading procedure.

19 Therefore, the preferred or proper placement of the cable  
20 44, and in particular, the location of attachment of the  
21 connector 48 to the load 12 is important in order to accomplish  
22 the tendency of the axle 27 to move or travel inwardly towards  
23 the various components of the load support portion 32  
24 schematically demonstrated by the sequential positions 1 through  
25 4 of Figure 8 when being located as described above. To the

1 contrary, the cable 44 has its position changed relative to the  
2 hand truck 20 by virtue of extending the length of the boom 50  
3 as represented in Figure 9. This outward extension of the boom  
4 50 and the outward positioning of the cable 44 relative to the  
5 load 12 will cause the tendency of the axle 27 to move outwardly  
6 or away from the load support portion 32, as indicated by  
7 directional arrow 84' and demonstrated in Figure 10 when the  
8 hand truck 20 and the cargo 14, 14' are removed from the load  
9 support portion 32.

10 As emphasized above, the location of the combined center of  
11 gravity of the load 12, or more specifically, the hand truck 20  
12 and the cargo 14 or 14' mounted thereon, is important to  
13 maintain the hand truck in a substantially vertical orientation  
14 during the loading and unloading thereof. Therefore, and by way  
15 of example only, when the cargo 14 assumes a first orientation  
16 indicated by the solid lines in Figure 1, the center of gravity  
17 will shift inwardly in accordance with the reference arrow 90.  
18 This will require the boom 50 to assume a shortened length in  
19 order to establish a location of connection between the  
20 connector 48 and the mounting arm 56 in order to align the cable  
21 44 with the center of gravity as indicated by the reference  
22 arrows 90.

23 To the contrary, when the cargo as at 14' assumes a  
24 different position or in fact is a different cargo, the center  
25 of gravity will shift as indicated by phantom reference line 92.

1 This causes a selective adjustment or positioning of the boom 50  
2 to assume a somewhat greater length in order that the cable 44  
3 is positioned in substantial alignment in accordance with the  
4 directional arrow 92.

5 With reference to Figure 11, yet another preferred  
6 embodiment of the present invention further demonstrates the  
7 structural and operational versatility of the assembly and is  
8 generally indicated as 10'. More specifically, the assembly 10'  
9 is operative to support a cargo generally indicated as 100 which  
10 may be considered "mobile cargo" due to the fact that it  
11 incorporates its own wheeled support base or wheel assembly,  
12 schematically represented by one or more wheels 102. As such,  
13 the mobile cargo 100 does not require the use of a hand truck or  
14 other mobile carrier 20 as with the embodiment of Figures 1  
15 through 10. However, the assembly 10' is substantially  
16 equivalent to that of the preferred embodiment of the assembly  
17 10 as described with reference to Figure 1 with the  
18 distinguishing exception being the absence of the hand truck or  
19 other mobile carrier 12 being considered part of the load.

20 Accordingly, and as shown in Figure 11 the assembly 10' is  
21 structured to position, mount and support a mobile cargo 100 on  
22 the exterior of a vehicle by being removably connected or  
23 attached to a hitch structure, generally indicated as 16, which  
24 may be of conventional design. In addition, the assembly 10'  
25 comprises a base 22 including a tongue 24 telescopically

1 attached to the hitch structure 16, as described above.  
2 Further, the base 22 includes a support assembly generally  
3 indicated as 30 which includes first and second support portions  
4 32 and 34 and a hoist assembly 36. Also, the hoist assembly 36  
5 includes an elongated stanchion 38 extending upwardly and  
6 outwardly from the base 22 and the aforementioned winch 40. The  
7 winch 40 is connected in driving relation to a cable 44 which  
8 extends along a length of the stanchion 38 as well as along a  
9 length of an adjustably structured boom 50. The cable 44 has a  
10 connecting structure 48 which may be in the form of a hook, snap  
11 coupling, or other structure, capable of being connected to the  
12 mobile cargo 100. Preferably, but not necessarily, a  
13 specifically structured connecting point 103 on of the mobile  
14 cargo 100 is used to attach the connector or coupling 48. In  
15 order to maintain a proper, "upright" orientation of the mobile  
16 cargo 100 the specifically structured connecting point 103 is  
17 disposed in substantial alignment with the center of gravity of  
18 the mobile cargo 100. When a connecting point 103, which is  
19 specifically structured to receive the coupling 48, is not  
20 affixed to the mobile cargo 100, the coupling 48 should still be  
21 structured to connect the free end of the cable 44 to a portion  
22 of the mobile cargo 100 which is also in substantial alignment  
23 with the center of gravity thereof. As will be described in  
24 greater detail hereinafter, the cable 44 may or may not be  
25 aligned with the center of gravity of the mobile cargo 100,

1 dependent at least in part on whether the mobile cargo 100 is  
2 being loaded onto the support portion 30, being supported  
3 thereon or being removed therefrom.

4 It should be noted that unlike the cargo 14 or 14'  
5 demonstrated in Figure 1, the center of gravity of the  
6 respective mobile cargo(s) 100 will be substantially constant.  
7 As such, the connection point 103 is disposed in substantial  
8 alignment with the center of gravity of each of the various  
9 mobile cargos 100. Attachment of the free end of the cable 44  
10 to a location on the mobile cargo 100 which is in substantial  
11 alignment with its center of gravity will facilitate the  
12 preferred "upright" orientation of the mobile cargo 100, such as  
13 when it is suspended and supported by the cable 44 independent  
14 of the load support portion 32. Such a preferred, upright  
15 orientation of the mobile cargo 100 better accomplishes the  
16 "control" of the mobile cargo 100 as it is being loaded and  
17 unloaded on to the load support portion 32, as well as when it  
18 is supported thereon.

19 In this preferred embodiment of the present invention, the  
20 adjustable longitudinal positioning of the boom 50 relative to  
21 the stanchion 38 is important in properly locating the mobile  
22 cargo 100 relative to the load support portion 32 immediately  
23 prior to it being loaded, while it is supported thereon and  
24 while it is being unloaded therefrom. More specifically,  
25 assuming that the cable 44 is preferably connected to the mobile



1 cargo 100 at a connecting point 103, the outward positioning of  
2 the boom 50 is adjusted such that the portion 27' of the mobile  
3 cargo 100 is disposed in close proximity to the load support  
4 portion 32. This will facilitate the loading of the mobile  
5 cargo 100 on to the load support portion 32. Once the mobile  
6 cargo 100 is supported on the load support portion 32, the  
7 length of the boom 50 may again be adjusted to best accomplish  
8 secure, controlled orientation of the mobile cargo 100, such as  
9 when the vehicle is traveling. During the unloading procedure  
10 of the mobile cargo 100, the boom 50 may again be adjusted such  
11 as by being extended outwardly a sufficient distance from the  
12 stanchion 38 to allow the mobile cargo 100 and the supported  
13 portion 27' to "swing away" from the load support portion 32.

14 Other factors which effect the outward extension of the  
15 boom 50 relative to the stanchion 38, as well as the positioning  
16 of the mobile cargo 100 relative to the load support portion 32,  
17 may include whether the vehicle is mounted on an incline. By  
18 way of example, if the vehicle is parked on a downhill incline,  
19 the boom 50 may be extended outwardly a greater than normal  
20 distance so that the mobile cargo 100 and the portion 27' is  
21 properly located relative to the support portion 32.  
22 Conversely, if the vehicle is parked on an uphill incline, the  
23 length of the boom 50 or the outward extension thereof would be  
24 considerably smaller so as to again facilitate a controlled,  
25 secured position of the mobile cargo 100 and portion 27' thereon

1 relative to the load support portion 32.

2 As with the embodiment of Figure 1, the load support  
3 portion 32 demonstrated in the embodiment of Figure 11 also may  
4 include a mounting plate 70 and at least one but preferably a  
5 plurality of retaining members or tangs 72. However, it is  
6 emphasized that the load support portion 32 may vary  
7 significantly from the mounting plate 70 in its dimension,  
8 configuration and structure to accommodate any one of a  
9 plurality of different mobile cargos such as, but not limited to  
10 lawn mowers, snow blowers, generators, power washers, etc. It  
11 is further emphasized that the popularity and commercial  
12 utilization of the assembly 10' of the present invention may be  
13 such that manufacturers of certain equipment, any of which would  
14 be considered a mobile cargo 100, may at least somewhat  
15 customize the structure thereof so as to facilitate its  
16 retaining engagement on the load support portion 32.

17 As set forth above, and for purposes of clarity, it is  
18 again emphasized that the load support portion 32 may comprise  
19 the aforementioned plate 70 and one or more tangs 72 and be  
20 disposed to engage and/or retain conventional or customized  
21 portion of the mobile cargo 100 such as, but not limited to, the  
22 portion 27'. Further structural modifications of the assembly  
23 10' differing from the previously described embodiments include  
24 the provision of one or more attachment members 25'. The  
25 attachment members 25' may assume a variety of different

1 locations and configurations so as to retain and be removably  
2 connected to other portions of the mobile cargo 100, such as an  
3 outwardly extending handle 104 as demonstrated. In addition,  
4 one or more of the attachment members 25' could be adjustably  
5 mounted so as to be selectively positionable along the length of  
6 the stanchion 38, so as to be brought into registry and  
7 removable retaining engagement with a handle or other components  
8 104 of the mobile cargo 100.

9 The loading of the mobile cargo 100 relative to the load  
10 support portion 32 will be substantially the same as  
11 demonstrated in the sequentially represented procedure of Figure  
12 8, described above. Similarly, removal of the mobile cargo 100  
13 from its supported position, as demonstrated in Figure 11, to a  
14 conventional position on the ground or other supporting surface  
15 is demonstrated by the sequentially represented procedure  
16 described with reference to Figure 10. However, it is again  
17 emphasized that the proximal location of the portion 27' of the  
18 mobile cargo 100 relative to the load support portion 32 to most  
19 efficiently accomplish the loading and unloading procedures,  
20 substantially as demonstrated in Figures 8 and 10 respectively,  
21 is due to the ability to adjustably regulate the length of the  
22 boom 50 relative to the stanchion 38, the load support portion  
23 32 as well as the mobile cargo 100 itself.

24 As emphasized in detail above, the structural and  
25 operational versatility of the assembly of the present invention

1 is such that it is capable of lifting and supporting a variety  
2 of different load/cargo combinations on a vehicle for safe and  
3 efficient transportation thereof. As also demonstrated, the  
4 load/cargo combinations may include the use of a hand truck or  
5 like mobile carrier defining part of the load and positioned to  
6 removably support a variety of different types of cargo, as  
7 described with reference to Figures 1 through 10. In the  
8 embodiment represented in Figure 11, the use of a hand truck or  
9 like mobile carrier would be unnecessary due to the wheeled base  
10 or like wheel assembly 102 providing mobility to the cargo 100.  
11 There is yet another preferred embodiment of the assembly  
12 represented in Figures 12 through 15 and indicated generally by  
13 reference numeral 10". Assembly 10" is specifically structured  
14 to accommodate yet another load/cargo combination, wherein the  
15 load 12' comprises a hand truck or like mobile carrier 20' as  
16 well as cargo 100' having an enlarged or otherwise relatively  
17 unusual size or configuration.

18 With reference to Figure 13, the cargo 100' is represented  
19 as being a refrigerator or any of a variety of other types of  
20 cargos wherein the height (or other aspects of its size or  
21 configuration) is such that it may not be capable of being  
22 lifted and supported utilizing the structure of the assembly 10  
23 and 10', as disclosed in Figures 1 and 11. Also, as will be  
24 discussed in greater detail hereinafter, the load 12' may be  
25 further defined by a combination of the cargo 100' and the

1 mobile carrier 20' or alternatively by the mobile carrier 20'  
2 independently. However, for purposes of clarity, the load 12'  
3 as represented in Figures 14 and 15 is absent the cargo 100'.  
4 However, the structural features of the assembly 10" of this  
5 alternative preferred embodiment of the present invention as  
6 well as its operation would be substantially, if not exactly the  
7 same, whether or not a cargo 100' is mounted on the mobile  
8 carrier 20'.

9 With reference now to Figure 12, this preferred embodiment  
10 of the assembly 10" comprises the base 22' including the  
11 outwardly projecting tongue 24' designed to be removably secured  
12 to the box type hitch 16 associated with a vehicle, not shown.  
13 The base 22' is removable from the hitch assembly 16 and is  
14 connected to a support assembly 105 such that the support  
15 assembly 105 is removable with the base 22' from the hitch 16.  
16 Moreover, the support assembly 105 includes at least one primary  
17 brace 106 extending upwardly from the tongue 24' of the base 22'  
18 into supporting engagement with the load support portion 32.  
19 The load support portion 32 in the embodiment of Figures 12  
20 through 15 preferably comprises a frame like structure including  
21 side frames 108 disposed in spaced apart relation to one another  
22 and cross braces 110 interconnecting the side braces 108 and  
23 also being secured to the vertical brace 106. It is emphasized  
24 that the specific structural configuration of the load support  
25 portion 32 may vary from that shown in Figure 12 and include

1 additional components as well as secure attachment thereof to  
2 the base 22' as well as the vertical brace 106 at various  
3 locations.

4 The assembly 10" further includes a hoist assembly 36'  
5 including a winch 40' connected in driving relation to a cable  
6 44'. The winch assembly 36' further includes a boom 50' which  
7 in at least one embodiment of the assembly 10" may include a  
8 mounting arm 54' and an arm segment 52' which is adjustable  
9 longitudinally relative to the length of the boom 50' as well as  
10 the mounting arm 54'. As such, the boom 50' at least partially  
11 defines a path of travel of the cable 44' from the winch 40' to  
12 the free end or coupling member 48 which serves to removably  
13 connect the cable 44' to the load 12'. It should be further  
14 noted that the boom 50' may be connected to a variety of  
15 locations in cooperative association with the winch 40' such as  
16 being attached to or integrally formed with the vertical brace  
17 106 or attached to or integrally formed on other portions of the  
18 frame assembly defining the load support portion 32. Also,  
19 rather than include the adjustably connected mounting arm 54'  
20 and arm segment 52', the boom 50' can be of a substantially one  
21 piece structure which is not adjustable along its length but  
22 which extends outwardly from the support assembly 105 as well as  
23 the load support portion 32 in a position which does not  
24 interfere with the location of the load 12', when then load 12'  
25 is disposed in its operative, supported position as demonstrated

1 in Figure 15.

2 As set forth above, the load support portion 32 may assume  
3 a variety of different structures, configurations, sizes, etc.  
4 best suited to accommodate support and movable engagement with  
5 the load 12', in particular the mobile carrier 20'. More  
6 specifically, the load support portion 32 includes a guide  
7 assembly, which in the embodiment of Figure 12 comprises at  
8 least the spaced apart side rails 108 which may be disposed,  
9 dimensioned and otherwise structurally configured to slidably  
10 engage corresponding portions, such as the side rails of the  
11 mobile carrier 20', as clearly evident from a review of Figures  
12 14 and 15. Further, in order to safely maintain the load 12'  
13 in the supported, operative position for traveling as  
14 demonstrated in Figure 15, the load support portion 32 includes  
15 at least one but preferably a plurality of retainer members 25',  
16 each of which may have a variety of different structures and  
17 configurations so as to be removably attached in retaining  
18 engagement with the mobile carrier 20' as should be evident.  
19 The one or more retainer members 25' could be substantially  
20 equivalent to the U-shaped retainer brackets or coupling members  
21 25' associated with the embodiments of Figures 1 and 11, as set  
22 forth above.

23 In operation, the load 12', which may comprise the  
24 oversized cargo 100' as well as the mobile carrier 20', is  
25 initially disposed on the ground or other supporting surface 200

1 in somewhat adjacent relation to the assembly 10". In such a  
2 position, the cable 44' is connected to an appropriate part or  
3 location on the mobile carrier 20' as demonstrated in Figure 13.  
4 Once so connected the load 12', including at least the mobile  
5 carrier 20' may be moved somewhat closer to the assembly 10"  
6 upon activation of the winch 40' and a "reeling in" of the cable  
7 44'. Movement of the load 12' is of course facilitated by the  
8 wheel assembly 125 associated with the mobile carrier 12'.  
9 Concurrent activation of the winch 40' will cause the load 12',  
10 including the mobile carrier 20' as well as the cargo 100' to  
11 tilt into the preferred, predetermined orientation best suited  
12 for supporting the load 12' on the assembly 10", as well as its  
13 transportation by the vehicle associated with the hitch assembly  
14 16. The positioning of the load 12' in the aforementioned  
15 angularly oriented or inclined orientation as demonstrated in  
16 Figures 14 and 15 is further facilitated by the path of travel  
17 of the cable 44' and location where the free end coupling 48 is  
18 secured to the mobile carrier 20'. As the loading process  
19 proceeds, the load 12' including the mobile carrier 20' and  
20 possibly the cargo 100', is lifted from the ground or other  
21 supporting surface 200 and fully assumes the preferred,  
22 predetermined angular or inclined orientation corresponding to  
23 the preferred angular or inclined orientation of the load  
24 support portion 32.

25 Again with reference to Figure 12, it is clearly evident



1       that the load support portion 32 including the guide means  
2       defined by the side member or braces 108 are disposed at a  
3       preferred, predetermined, angular or inclined orientation  
4       relative to the substantial horizontal positioning of the base  
5       22', and of course, the ground or other supporting surface 200.  
6       Therefore, when the load 12' is in the operative, supported  
7       position for transportation as represented in Figure 15, the  
8       mobile carrier 20' and any cargo 100' also assumes the preferred  
9       and angular or inclined orientation which corresponds to the  
10      inclined orientation of the load support portion 32.

11       Since many modifications, variations and changes in detail  
12      can be made to the described preferred embodiment of the  
13      invention, it is intended that all matters in the foregoing  
14      description and shown in the accompanying drawings be  
15      interpreted as illustrative and not in a limiting sense. Thus,  
16      the scope of the invention should be determined by the appended  
17      claims and their legal equivalents.

18       Now that the invention has been described,